



ELENA Completed Project Factsheet
Renewable Energy For Emission Reduction in Central Denmark Region
(REFER-CDR)

Location of planned investments	Central Denmark Region, Denmark
Final Beneficiary	Central Denmark Region
Final Beneficiary's address	Skottenborg 26 8800 Viborg, Denmark
CoM signatory	No
Sector	Energy Efficiency and Renewable Energies in District Heating sector
Total PDS costs	EUR 3,109,173.04
ELENA contribution	EUR 2,798,255.73
Project development services financed by ELENA	<p>The Project Development Services (PDS) financed by ELENA provided support to implement the District Heating (DH) Investment Programme in the Central Denmark Region. The majority of the ELENA funds were used for external expertise, with support for internal staff mainly related to project management.</p> <p>The PDS consisted of:</p> <ol style="list-style-type: none"> 1. Screening of technology opportunities at the individual plant 2. Calculations and analysis of applying relevant technologies 3. Assist and prepare applications to authorities in collaboration with the plants 4. Detailed project engineering of the selected technology at the individual plant 5. Legal assistance provided to the individual plant 6. Assist and contracting at the individual plant 7. Advice and knowledge exchange networks
Description of ELENA operation	<p>REFER-CDR provided support to the implementation of the District Heating Investment Programme in the Central Denmark Region. This programme supported small district heating energy supply companies in their transition to renewable energy resources for their district heating networks, as they move away from gas.</p>
Timeframe	May 2017 – October 2021
Investment programme description	<p>The aim of the REFER-CDR project was to ensure acceptable and low consumer prices for energy and to ensure a production capacity that is not vulnerable to changing policies and energy taxation. Thanks to this project, many of the district heating plants' heat production is now mainly based on renewable energy. There have been in total 26 investment projects made up of district heating plants that have changed their energy mix from gas-based CHP to renewable energy.</p> <p>In terms of investments, the majority of projects targeted the installation of heat pumps, followed by the development of DH networks and other RES heat production such as biogas. District heating plants that have invested in heat</p>

	<p>pumps typically cover 80-90% of the heat production and, the plant's old natural gas engines are mainly only used during winter in peak loads.</p> <p>During the project period, the district heating plants have lost state support which would have meant price increases for the heat consumers of fossil fuel based DH, but with investments in green technology, the plants have ensured stable heat prices and, in some cases, price reductions. The average cost per saving, either as RE or EE, is approximately EUR 300,000 EUR / GWh</p>
Investment in implementation phase	EUR 66.5m
Results expected to be achieved	Energy savings of 171 GWh/y RES generation of 67 GWh/y GHG emission reduction of 48,114 t CO ₂ eq/y
Leverage factor achieved	23
Lessons learnt	<p>The investments meant that the district heating plants predominantly now base their heat production on renewable energy. Despite lost state support and gas price increases which would have meant price increases for the heat consumers, the plants have ensured stable heat prices and, in many cases, price reductions.</p> <p>The district heating sector has set a goal that heat production must be CO₂ neutral from 2030, which has meant that the entire district heating industry has a focus on green technology in the form of heat pumps and solar heating. It is therefore expected that the district heating industry will make large investments especially in heat pumps in the coming years.</p> <p>Through the project, the Region has learned that it is incredibly important that several sectors coordinate and collaborate on the green transition. Municipalities, energy suppliers and local actors need to meet and plan the necessary investments in order to achieve the overall climate goals.</p> <p>Throughout the project period, REFER-CDR has had a permanent circle of partners consisting of 24 small district heating plants. The experience is that small heating plants have longer decision-making processes and it has therefore taken them a long time to initiate the investments. It would have been better to expand the circle of partners so that it would be possible to support more projects. This could have possibly increased the investments volume to lead to a higher leverage factor.</p> <p>Through the project, Central Denmark Region has communicated on the investment projects through conferences and workshops. Due to Covid-19, there has been limited opportunity for participation at conferences and the district heating plants could not hold open house or allow access for visitors. This meant less publicity and awareness raising than would otherwise have been possible.</p>
Further information sources	https://www.refer-cdr.eu/engelsk/
Contact person at ELENA Beneficiary	Lea Munkholm, leamun@rm.dk